

THE AUSTRALIAN APPLE LEAFHOPPER (*TYPHLOCYBA AUSTRALIS*
Frogg.).

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(Communicated by Dr. R. J. Tillyard.)

(Four Text-figures).

In the Agricultural Gazette of New South Wales, Vol. 29, p. 568, 1918, Mr. W. W. Froggatt described a Jassid injurious to apple foliage, under the name of *Empoasca australis*, n. sp. He recognised that the injury his new species inflicted on apple leaves was different from that of the well-known American Apple Leafhopper (*Empoasca mali* Le Baron) which is as yet unknown in Australasia; but he supposed that the Australian species was likewise an *Empoasca*. This is not the case. Both species belong to the very well defined Cicadellid subfamily, the *Eupteryginae* (*Typhlocybinae*, *Typhlocybidæ* auctt.) but the venation of the Australian insect shows it to be a true *Typhlocyba* (syn. *Empoa*). These differences may be summed up as follows:—

Wing (hindwing, the forewing being known as the tegmen) with submarginal vein *Empoasca* Walsh
Wing without submarginal vein *Typhlocyba* Germar.

This character shows very well in Froggatt's excellent figure (*l.c.*). *Empoasca mali* Le Baron indicates its presence "by the characteristic curling of the terminal foliage. This resembles the contortion caused by an attack of the green apple aphid (*Aphis pomi*) and consists of the incurling of the end and the edges of the leaf with a consequent puckering of the upper surface." This species also causes wilting of early potatoes.

On the other hand, the injury caused by *Typhlocyba australis* Frogg. is very similar to that of its very near relative *T. rosae* Linn. which occasionally attacks apple in North America. The apple leaves become "variegated with yellow spots" which spread to form irregular patches, giving the whole leaf a discoloured appearance and eventually killing it. In contradistinction to *Empoasca*, this species shows no preference for young leaves and shoots but rather for old foliage.

Typhlocyba australis has been introduced into New Zealand where it does considerable damage to apple trees in the orchard districts of Auckland (North Island) and of Nelson (South Island).

The insect is characterised as follows:—

Vertex and *pronotum* bright sulphur yellow; *eyes* usually blackish. *Scutellum* bright yellow, often with deeper yellow patch on each side of base. *Tegmina* of the same bright yellow tint, the *membrane* iridescent and hyaline. *Wings* hyaline. *Underside* uniform yellow. *Frons* yellow. *Vertex* approximately twice as broad as medianly long; fore border rounded. *Pronotum* trapeziform,

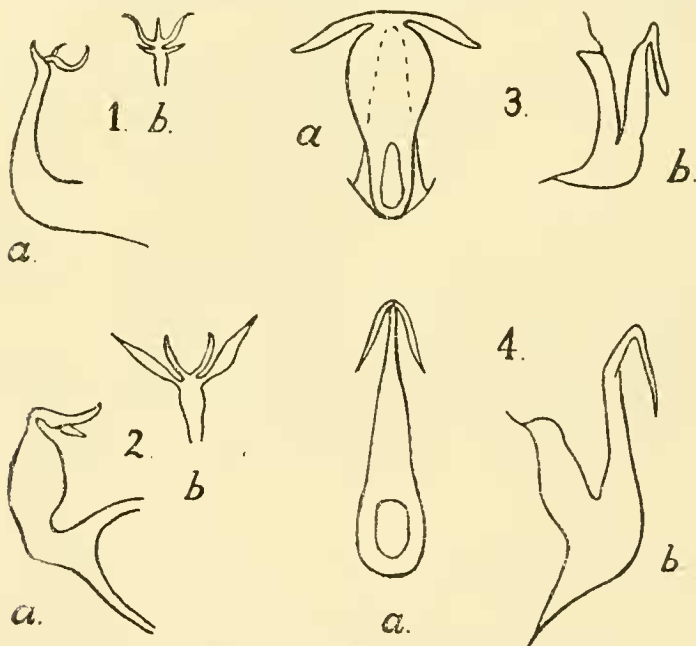
rounded anteriorly and slightly excavated posteriorly. Sentellum slightly narrower at base than base of head including eyes.

Ovipositor shining mahogany brown.

Length (with folded tegmina) 4 mm.

In New Zealand it is found in the Nelson and Auckland fruit districts (November to March), where it inflicts considerable damage on the foliage of apple and hawthorn. The signs of its attack are rusty spots and patches on both sides of young and old leaves, particularly the latter.

Mr. F. Muir, of Honolulu, has very kindly furnished me with drawings of the aedeagus of allied Australian Eupterygines and of the European and N.



(All figures drawn by F. Muir, F.E.S., Honolulu).

- Text-fig. 1. *Typhlocyba australis* (Froggatt), paratype, Binalong, N.S.W. *a*, lateral view of aedeagus of male. *b*, apex of ditto.
- Text-fig. 2. *Typhlocyba rosae* (Linn.), U.S.A. *a*, lateral view of aedeagus of male. *b*, apex of ditto.
- Text-fig. 3. *Erythroneura honiloa* Kirk., Bundaberg, Q. *a*, front view of aedeagus of male. *b*, lateral view of ditto.
- Text-fig. 4. *Erythroneura sidnica* Kirk., Sydney, N.S.W. *a*, front view of aedeagus of male. *b*, lateral view of ditto.

American *Typhlocyba* (*Empoa*) *rosae* Linn. As will be readily seen these indicate clearly the points of distinction between the species under discussion and those described by Kirkaldy.

Mr. Muir, to whom specimens were submitted by Dr. R. J. Tillyard, who has kindly placed all notes in my hands, is unable to identify *T. australis* with any American or European species; but he nevertheless considers it possibly an importation into Australia. Until records however are forthcoming of its occurrence in other countries we are justified in considering it distinct. Good figures of the imago, nymph, tegmen, wing and injury to apple foliage are given by Froggatt in his original paper.